

# The Canadian Entomologist

VOL. LVL

ORILLIA, NOVEMBER, 1924.

No. 11

## DIPTERA COLLECTED ON A NEW JERSEY SALT MARSH.

BY HARRY B. WEISS.

New Brunswick, N. J.

During the course of an insect and plant survey of a section of salt marsh along the New Jersey coast, the following species of Diptera were collected. Mr. Chas. W. Johnson kindly identified the specimens thereby making the publication of the list possible. The salt meadow where the collecting was done is located at Morgan, New Jersey, about a mile below South Amboy and is a part of the Cheesequake marsh. Most of the vegetation on the marsh consisted of *Spartina patens* and *Juncus gerardi*. Collecting took place regularly at weekly or ten-day intervals throughout 1923 until the end of the insect season and it is thought that the list represents a fair sample of the species present. Species starred have been recorded from inland points of New Jersey according to the records in Smith's "Insects of New Jersey" (N. J. State Mus. Rept. 1909). Some fourteen of the families listed are noted for the saprophagous food habits of many of their members and their presence on a marsh containing a large percentage of organic matter is not unusual.

### FAMILY TIPULIDAE

*Dicranomyia liberta* O. S.\* VI, 5.

*Helobia hybrida* Meig. \* V, 25; VII, 19, 25; VIII, 7, 30.

*Nephrotoma ferruginea* Fabr. \* V, 25; VI, 5.

### FAMILY CHIRONOMIDAE

*Forcipomyia specularis* Coq. \* V, 25.

Two unidentified species.

### FAMILY CULICIDAE

*Aedes cantator* Coq. \* V, 4; VII, 30.

*Aedes sollicitans* Wlk. \* V, 25; VI, 19; VII, 25; VIII, 7; IX, 12.

### FAMILY MYCETOPHILIDAE

*Sciara coprophila* Lint. V, 52.

### FAMILY STRATIOMYIDAE

*Odontomyia interrupta* Oliv. \* V, 25.

*Nemotelus melanderi* Bks. VI, 5, 19; VII, 19, 30; VIII, 7, numerous.

### FAMILY TABANIDAE

*Chrysops flavidus* Wied. \* VI, 19, 27; VII, 19.

*Chrysops fuliginosus* Wd. \* VI, 19.

*Tabanus sparus* Whit. \* VII, 25.

*Tabanus nigrovittatus* Macq. \* VI, 27; VII, 19; VIII, 7, 16.

*Tabanus nigrovittatus* Macq. var. *conterminus* Walk. VII, 19.

*Tabanus lineola* Fabr. \* VII, 19.

### FAMILY DOLICHOPODIDAE

*Crysotimus* sp. VIII, 17.

*Crysotus* sp. VII, 25.

*Sympycnus lineatus* Lw. \* VI, 27; VII, 19, 25, 30; VIII, 30, plentiful.

*Asyndetus syntormoides* Wheel. \* VI, 19.

*Dolichopus marginatus* Aldr. VII, 19, 30; VIII, 16, 30; IX, 12, numerous.

*Pelastoneurus lamellatus* Lw. VI, 19, 27; VII, 5, 19, 25; VIII, 30; IX, 12, v numerous.

*Gymnopternus* sp. VI, 5.

#### FAMILY PIPUNCULIDAE

*Pipunculus appendiculatus* Cress. VIII, 7.

*Pipunculus scoparius* Cress. VII, 19, 30; VIII, 7, 30; IX, 12, plentiful.

*Pipunculus minor* Cress. VIII, 16.

#### FAMILY SYRPHIDAE

*Platychirus quadratus* Say. \* V, 25; VI, 19; VII, 5, 25, 30, plentiful.

*Syrphus wiedemanni* Johns. \* V, 25.

*Sphaerophoria menthastri* L. \* VI, 27.

*Toxomerus marginatus* Say \* VII, 19, 30; VIII, 7, 30, plentiful.

#### FAMILY TACHINIDAE

*Schizotachina vitinervis* Thom. VIII, 16.

*Myiophasia atra* D. \* VI, 19; VII, 19, 25, 30; VIII, 7; IX, 12, very plentiful

*Ocyptera carolinae* Desv. \* VIII, 30.

*Myrsina tenthredinidarum* Town. \* VI, 27; VII, 27.

*Euzenilla convexa* Town. VII, 25.

#### FAMILY SARCOPHAGIDAE

*Sarcophaga bullata* Park. VI, 5; VII, 25.

*Lucilia sericata* Meig. \* VIII, 16.

#### FAMILY MUSCIDAE

*Pollenia rudis* Fabr. \* VII, 30.

*Phormia regina* Meig. \* VI, 19.

#### FAMILY ANTHOMYIDAE

*Limnospila albifrons* Zett. V, 25; VII, 19, 25, 30; IX, 12, numerous

*Phorbia cilicrura* Rnd. \* VI, 5; VII, 19.

*Phyllogaster cordyluroides* Stein. IX, 12.

*Lispa albitarsis* Stein. \* VI, 27; VIII, 16; IX, 12, numerous.

*Coenosia lata* Wlk. \* VIII, 7, plentiful.

#### FAMILY SCATOPHAGIDAE

*Scatophaga furcata* Say \* VII, 5.

#### FAMILY BORBORIDAE

*Leptocera limosa* Meig. \* VI, 5, 19; VII, 19, 25, 30; VIII, 7, 30, numerous.

#### FAMILY SCIOMYZIDAE

*Dictya umbrarum* L. \* VI, 5; VIII, 7.

*Pherbellia nana* Lw. \* VII, 30.

#### FAMILY ORTALIDAE

*Chaetopsis aenea* Wied. \* V, 25; VII, 19, 25, 30; VIII, 16, 30, numerous.

*Chaetopsis apicalis* Johns. V, 25; VI, 5, 27; VII, 19, 30; VIII, 16; IX, 12, numerous.

#### FAMILY EPHYDRIDAE

*Notiphila bispinosa* Cress. VI, 27; VII, 25.

*Psilopa flavida* Ccq. VII, 25, 30; VIII, 30; IX, 12.

*Psilopa fulvipennis* Hine. VIII, 30.

*Discocerina obscurella* Fallen. VIII, 303.

*Dimecoenia spinosa* Lw. \* VII, 25.

*Scatella stagnalis* L. \* VI, 5; VI, 25.

*Clanoneurum cimiciformis* Hal. VIII, 30.

## FAMILY CHLOROPIDAE

\* *Hippelates dorsalis* Lw. VII, 30.

*Botanobia trigramma* Lw. \* V, 25; VI, 5, 19, 27; VII, 30; VIII, 7; IX, 12, very abundant, present by millions.

*Meromyza americana* Fitch. \* V, 25; VII, 25.

*Botanobia frit* L. \* var. *pusillus* Meig. VII, 18.

*Botanobia coxendix* Fitch. \* VI, 19.

*Botanobia dorsata* Aldr. VIII, 16, very abundant.

*Elachiptera decipiens* Lw. VIII, 7; IX, 12.

## FAMILY AGROMYZIDAE

*Cerodontha dorsalis* Lw. \* VII, 19.

*Leucopis simplex* Lw. \* VI, 5.

The two species of *Culicidae* are of course maritime and their presence inland is due to migrations. Mr. Johnson advises me that he considers *Chrysops flavidus* Wied., *C. fuliginosus* Wied. and *Tabanus nigrovittatus* Macq., as being strictly maritime, their presence inland being largely accidental. The three species of *Pipunculidae* are not maritime and are not starred in view of the fact that they are not recorded in Smith's "List". The same is true of *Schizotachina vitinervis* Thom., and *Eusenilla conexa* Town., in the *Tachinidae* and *Sarcophaga bullata* Park., in the *Sarcophagidae*. Mr. Johnson states that he looks upon *Myiophasia atra* D. proper as a maritime species and that two or three species are involved under the name *M. aenea* Wied., in the New Jersey "List," also that in the *Ortalidae*, *Chaetopsis aenea* Wied., is strictly a salt and brackish marsh species, three species being involved under this name in the New Jersey "List", two being inland species.

Concerning *Clanoneurum cimiciformis* Hal., Mr. Johnson writes that this is a European species which is also found in Egypt; that he has collected it on the salt marsh at Mount Desert, Maine; received it from San Diego, California; that Doctor Joseph Bequaert has it from Gardiners Island, New York, and that Doctor A. H. Sturtevant has collected it at Woods Hole, Massachusetts.

## A REVISION OF THE NEARCTIC SPECIES IN THE GENUS FABRICIELLA (TACHINIDAE).\*

BY J. D. TOTHILL,

Fredericton, N. B.

This revision of the genus *Fabriciella* has been carried on intermittently since March 1921 and is based on material in the Canadian National Collection and the United States National Museum. The writer wishes to express his appreciation to Dr. L. O. Howard and Dr. J. M. Aldrich for the privilege of examining the specimens in the latter collection. It is also a pleasure to acknow-

\*—Contribution from the Entomological Branch, Dept. of Agric., Ottawa.

ledge courtesies extended by the authorities of the Brussels and Vienna museums respectively in the matter of sending types for examination.

The genus *Fabriciella* as used in this paper includes those flies closely related to the genotype, *ferox* Panz. It differs from *Tachina*, with *grossa* Linn. as genotype, in lacking the extremely long genital forceps found in *grossa* Linn. Specimens before me identified by Dr. Bezzi as *T. grossa* L., *T. meigenii* R. D., and *T. fera* L., all have the long forceps, whereas specimens identified as *ferox* Panz., *marklini* Zett. and *rotundata* Harr. exhibit three of the types of forceps found in the nearctic species of *Fabriciella*.

#### GENERIC DIAGNOSIS

Head as wide at vibrissae as at base of antennae. Vibrissae far above the oral margin. Palpi well developed, usually club-shaped; yellow. Eyes not hairy. Genae pollinose or subpollinose, and hairy. Parafacials pollinose and beset with small hairs. Facial ridges bristly on the lower fourth. Facial depression shallow and without a median carina. Second antennal segment longer than the third; arista thickened on basal three-fourths. Front wider in the females than in the males. Ocellar bristles present and directed forward; the inner row of longer frontal bristles extending well below the antennal base; proclinate orbital bristles present in the females. Occiput with thick white pile.

Thorax with three pairs of sternopleural and four pairs of dorsoventral bristles, although freak conditions are not uncommon. Scutellum with three pairs of marginal bristles. Wings of the generalized Tachinid type with a few small hairs at the base of the third vein; hyaline. Legs black, the hind tibiae not evenly ciliate, the fore tarsi frequently dilated in the females.

Abdomen black or partly orange, with or without discal macrochaetae on second and third segments. Male genitalia large and highly characteristic, the forceps being of great service in showing the interrelations of species, the accessory plate immediately behind the forceps represented by a pair of claspers suggesting a ring when in the resting position. The parts of the genitalia are essentially as described for the Sarcophagidae by Dr. J. M. Aldrich in his "Sarcophagidae and Allies, 1916"; and the simple method of spreading the genitalia described therein serves admirably for the Tachinidae.

#### NOTES ON SYNONYMY

*Kermodei* Tn., described from a male, is a synonym of *lugubris* v. d. Wulp which is apparently synonymous with *algens* Wied.

Through the courtesy of the Brussels museum authorities the type of *lugubris* was examined and as it is a male from Quebec City it could be placed immediately. The Vienna museum authorities also very kindly sent me the type of *algens* Wied. for examination. It is a female, somewhat rubbed and without a locality label; it agrees almost perfectly with the female of a pair taken in coitu, the male of which is undoubtedly *lugubris*.

*Eupodermocera robinsoni* Tn. is a synonym of *nitida* V. d W. Dr. J. M. Aldrich kindly pointed out that the type, a female, was described as having the third antennal segment truncate which would appear to settle the status of *robinsoni*. Williston also referred this species here.

*Decisa* Walk. belongs to the genus *Jurinia*. The forceps of the genitalia do not agree at all with any species in *Fabriciella* but agree perfectly with those of the genotype of *Jurinia*.

*Florum* Walk. The type is a female from St. Martins Falls, Albany River, Ont. Until it has been examined the species is unrecognizable.

*Immaculata* Macq. A Brazilian species that probably does not occur in "Arizona" or elsewhere in North America.

*Dakotensis* Tn. The type was kindly examined for me at the Kansas University Museum, Lawrence, by Dr. Aldrich and can be definitely placed on genitalic characters.

*Orientalis* Tn. Type was examined in the United States National Museum and although several species were included in the paratype series the species can be recognized on genitalic characters.

*Hystricosa* Will. Probably a *Dejeania*, the dorsum being nearly as bristly as in *Bombiliomyia abrupta*. The strong and numerous discal and marginal macrochaetae readily separate it from *Fabriciella*.

## KEY TO NEARCTIC MALES.

## A. Abdomen with conspicuous orange-colored markings.

1. Dorsal surface of forceps flat .....2  
Dorsal surface of forceps strongly elevated .....5
2. Parafrontals pollinose, not shining, tip of forceps abruptly acuminate .....  
.....*acuminata* n. sp.  
Parafrontals wholly or partly black and shining .....3
3. Orange abdominal markings usually confined to the last segment, tip of forceps acuminate .....*orientalis* Tn.  
Ventral and lateral parts of tergites orange .....4
4. Small species with genae subshining and the tip of forceps not acuminate .....*planiforceps* n. sp.  
Large species with genae opaque and the tip of forceps acuminate .....  
.....*dakotensis* Tn.
5. Lower corner of the seventh tergite (second genital segment) with a group of small rasp-like spines .....*spinosa* n. sp.  
Without such spines .....6
6. Narrowest width of parafacials equal to twice the length of second antennal segment .....*palpalis* Coq.  
Parafacials narrower .....7
7. Narrowest width of front equal to twice the length of the second antennal segment, the forceps remarkably compressed laterally, ...*compressa* n. sp.  
Front narrower, forceps less or not at all compressed .....8
8. Narrowest width of parafacials equal to length of second antennal segment 9  
Parafacials narrower .....10
9. Genal hairs yellow, genital segments orange .....*latifacies* n. sp. ✓  
Some of genal hairs black, genital segments fuscous, .....*latigena* n. sp.
10. Narrowest width of front greater than the length of second antennal segment .....11  
Narrowest width of front less than the length of second antennal segment, 12
11. Sternites yellow, hard part of proboscis notably short, ...*brevirostris* n. sp. ✓  
Sternites fuscous, proboscis normal .....*montana* Tns.
12. Sternites yellow, claws of front tarsi longer than the last three tarsal segments .....*longiunguis* n. sp.



- Sternites fuscous, claws of front tarsi shorter .....13
13. Second antennal segment fuscous .....*nivalis* n. sp.  
Second antennal segment bright orange colored .....14
14. With discal bristles on second and third abdominal segments, *pilosa* n. sp.  
Without discal bristles .....*canadensis* n. sp.  
AA. Abdomen black or at most with obscure dull chestnut colored markings.
1. Third antennal segment with apex truncate and having outer margin produced forward .....*nitida* V. d. W.  
Third antennal segment normal .....2
2. Second genital segment with a marginal row or group of spinules on the lower edge; the second abdominal sternite with a thick tuft of short, backwardly directed abruptly tapered bristles .....3  
Second genital segment destitute of spines; the second sternite normal .....5
3. Apical ring-like tips of the accessory plate unusually broad and ending bluntly .....*latianulum* n. sp.  
Apical ring-like tips of the accessory plate normal and tapered to a point ..4
4. The spinules on the lower margin of the second genital segment comb-like in arrangement; profile of the beak-like portion of forceps strongly convex .....*algens* Wied.  
The spinules too short to be comb-like in arrangement, profile of the very short beak-like portion straight, .....*spineiventer* n. sp.
5. The forceps ending in a slender unflattened beak-like portion .....6  
Forceps flattened dorsoventrally just behind the extreme tip, the flattened part being somewhat concave .....7
6. Parafrontals shining black, the beak-like tip of the forceps being unusually short .....*latifrons* n. sp.  
Parafrontals pale golden pollinose; beak-like tip of the forceps long and curved .....*rostrata* n. sp.
7. Parafrontals shining black .....*piceifrons* Tn.  
Parafrontals pale golden pollinose .....8
8. Width between the eyes less than the length of second antennal segment; the shining tip of forceps as broad as long, .....*latiforceps* n. sp.  
Width between the eyes as great or greater than length of second antennal segment, the shining tip of forceps longer than broad, .....9
9. Second abdominal segment with three pairs of median marginal macrochaetae .....*hispida* n. sp.  
Second abdominal segment with only one pair of median marginal macrochaetae .....*emarginata* n. sp.

***Fabriciella acuminata* n. sp.**

*Male.* Width of front equal to the length of second antennal segment, parafrontals opaque pollinose. Parafacials in narrowest width equal to half the length of second antennal segment. Genae subopaque with sparse black hairs. Proboscis and palpi of normal length. Second antennal segment yellow. Abdomen including the sternites yellow except for a median longitudinal dorsal black stripe that disappears caudally. Forceps flat in profile, acuminate at apex, with the basal hairy part almost as broad as long.

*Holotype*—1 ♂, (B. & B. No. 52), Colorado, in the United States National Museum.

*Paratype*—♂, Colorado, (C. V. Riley); No. 810 in the Canadian National Collection, Ottawa.

***Fabriciella orientalis* Tn.**

*Male*. Width of front at anterior ocellus slightly greater than the length of second antennal segment. Parafrontals black and shining except for a narrow outer subpollinose margin. Narrowest width of parafacials half that of front. Genae subopaque with sparse black hairs. Proboscis and palpi of normal length. Second antennal segment yellow. Front tarsi not dilated, the claws not quite as long as the last three tarsal segments. Abdomen including the sternites black except for a conspicuous spot of orange on the last segment and sometimes dull orange laterally. Forceps flat in profile, acuminate at apex, with the basal hairy part distinctly longer than broad.

*Female*. Same as the male but front twice as wide, the parafrontals broadly black and shining, the parafacials about one third as wide as the front at narrowest points. The caudal orange spot more definite and usually confined to the last tergite.

Redescribed from 3 males and 7 females taken at Kentville, N. S., Fredericton, N. B.; Ft. Coulonge, Que.; Hastings Co., Ont.; Grove Hill and Beltsville, Md.; Franconia, N. H.; Staunton, Va.; an unnamed station in Va.

Townsend's type is in the United States National Museum.

*Homotype*—1 ♂, Hastings Co., Ont., in the Canadian National Collection, Ottawa.

***Fabriciella planiforceps* n. sp.**

*Male*. Width of front at anterior ocellus equal to or slightly greater than length of the second antennal segment. Second and third antennal segments equal in length, the second yellow. Parafrontals black and shining. Narrowest width of parafacials equal to about three-fourths the length of the second antennal segment. Genae subshining with sparse black hairs. Proboscis and palpi of normal length. Front tarsi not dilated, the claws as long as the two last tarsal segments. Abdomen yellow except for a broad dorsal longitudinal black stripe and the fuscous sternites. Forceps flat in profile, not acuminate at apex, with the basal hairy part almost as broad as long.

Stature small as in *acuminata* and color also similar but easily distinguished by the black parafrontals and the absence of a sharp point at the apex of the forceps.

*Holotype*—♂, North Carolina, (C. V. Riley); in the United States National Museum.

***Fabriciella dakotensis* Tn.**

*Male*. Width of front at anterior ocellus equal to or slightly greater than length of second antennal segment. Parafrontals black and shining except for a narrow outer pollinose margin. Narrowest width of parafacials equal to about three-fourths the length of the second antennal segment. Genae subopaque with sparse black hairs. Proboscis and palpi of normal length, second antennal segment yellow. Front tarsi not dilated, the claws not quite as long as the last three tarsi. Abdomen orange except for a wide black median longitudinal dorsal stripe

that does not usually extend to the fourth tergite; sternites usually somewhat fuscous. Forceps flat in profile, acuminate at apex, with the basal hairy part distinctly longer than broad.

Redescribed from 12 males taken at Severn, Ontario; Sudbury, Ontario; Aweme, Manitoba; Sebago Lake, Maine; Mt. Holyoke Gap, Massachusetts; Georgetown, D. C.

The holotype in the Kansas University Museum was kindly examined by Dr. J. M. Aldrich. It is a male and appears to agree perfectly with this series.

***Fabriciella compressa* n. sp.**

*Male.* Width of front at anterior ocellus equal to eye width. Second antennal segment yellow and equal in length to third. Parafrontals opaque. Parafacials wider at narrowest part than the length of the second antennal segment. Genae subshining, covered with sparse black hairs. Proboscis and palpi normal. Front tarsi not dilated, the claws somewhat shorter than the last three tarsal segments. Abdomen orange except for the fuscous sternites and black longitudinal medio-dorsal stripe on the first four segments. Forceps strongly thickened dorso-ventrally with an arcuate dorsal profile and remarkable for being compressed laterally into a thin plate.

*Holotype*—♂, Leadville, Colo., July 14, 10 to 11,000 ft., (H. F. Wickham); in the United States National Museum.

***Fabriciella latigena* n. sp.**

*Male.* Width of front at ocellus about three-fourths the eye width. Second antennal segment yellow, longer than the third. Parafrontals opaque. Parafacials at narrowest point equal or slightly greater than length of second antennal segment. Genae pollinose, with sparse black hairs. Proboscis and palpi normal. Front tarsi not dilated the claws almost as long as the three last tarsal segments. Anterior outer corners of the pronotum black. Abdomen orange except for a black dorsal vitta that widens caudally to include much of the fourth and all of the genital tergites. Sternites yellow, forceps strongly arched longitudinally and terminated by a broad shining somewhat concave tip.

*Female.* Front wider; usually sub-shining black above.

*Holotype*—♂, Lillooet, B. C., 26th July, 1917, 3000 ft., (J. D. Tothill); No. 806 in the Canadian National Collection, Ottawa.

*Allotype*—♀, Hedley, B. C., August 29, 1923, (C. B. D. Garrett).

*Paratypes*—2 ♂, Revelstoke Mt., B. C., Aug. 12, 1923, (P. N. Vroom; E. R. Buckell); 2 ♂, Hedley, B. C., Aug. 23, 29, 1923 (Garrett); ♂, Keremeos, B. C., July 10, 1923 (Garrett); ♂, Penticton, B. C., June 7, 1919, (Buckell); ♂, Lillooet, B. C., July 10, 1916, (A. W. Phair); ♂, Stein Mts., Ore., June 24, 1922, (W. J. Chamberlin); ♂, Victor, Montana, Aug. 7, 1918; 2 ♂, Sparta, Ore., July 2, 1922 (Chamberlin). Paratypes in the United States National Museum and the California Academy of Sciences.

***Fabriciella latifacies* n. sp.**

*Male.* Width of front at ocellus almost equal to eye width. Second antennal segment yellow, longer than the third. Parafrontals opaque. Parafacials wider than length of second antennal segment. Genae pollinose with sparse mostly straw-colored hairs. Proboscis and palpi normal. Front tarsi not dilated, the claws almost as long as the three last tarsal segments. Front corners of the



pronotum yellow. Abdomen orange except for the shadow of a dorsal black stripe on the first segment. Sternites and the genital segment yellow. Forceps strongly arched longitudinally and broadly sulcate toward the tip.

Distinguished from *latigena* by the characters given in the key and also by the yellow front corners of the pronotum, the almost total absence of a black dorsal vitta on the abdomen, and the yellow genital segments.

*Holotype*—♂, Ormsby Co., Nev., July 6, (Baker); in the United States National Museum.

*Paratype*—♂, Rogerson, Idaho, Sept. 7, 1923, (Carl E. Duncan), reared from *Chrysothamnus*, in the Canadian National Collection, Ottawa.

#### ***Fabriciella spinosa* n. sp.**

*Male*. Width of front at anterior ocellus slightly greater than length of the second antennal segment. Second antennal segment yellow and longer than the third. Parafrontals opaque. Narrowest width of parafacials equal to about three-fourths the length of second antennal segment. Genae pollinose with sparse black hairs above. Chitinous shaft of proboscis unusually short. Front tarsi slightly dilated, the claws as long as the three last tarsal segments. Abdomen orange except for a feebly developed black stripe along the middle of the dorsum, sternites also yellow; transverse subpollinose bands are conspicuous on the broad bases of the second, third and fourth segments. Forceps strongly arcuate in profile and tipped by a narrow shining part. Distinguished from all the other yellow-bodied *Fabriciella* by the group of strong bristles on the lower corner of the seventh tergite or second genital segment.

*Female*. Same as male but front as wide as eye, parafacials as wide as length of second antennal segment; tarsal claws as long as last tarsus; the tarsi not inflated or widened out.

*Holotype*—♂, Peachland, B. C., July 22, 1912, (J. B. Wallis); No. 800 in the Canadian National Collection, Ottawa.

*Allotype*—♀, Mts. near Claremont, Calif., (Baker); in the United States National Museum.

*Paratypes*—♂, same data as allotype, in the Canadian National Collection, Ottawa; 3 ♂, same data as allotype, and 1 ♂ from Los Angeles Co., California, in the United States National Museum.

#### ***Fabriciella pilosa* n. sp.**

*Male*. Width of front equals one half the eye width. Second antennal segment yellow and slightly longer than the third. Parafrontals opaque becoming subshining toward the ocellar triangle. Narrowest width of parafacials equal to three-fourths the length of second antennal segment. Genae pollinose with sparse black hairs above. Proboscis and palpi normal. Front tarsi not dilated, the claws somewhat shorter than the last two tarsal segments. Abdomen with strong hairs or bristles on the disc of segments two and three; black except for the dull orange sides. Forceps strongly arched longitudinally, terminating in the usual broad somewhat concave, shining, plate.

*Holotype*—♂, Hedley, B. C., July 29, 1923, (C. B. D. Garrett); No. 801 in the Canadian National Collection, Ottawa.

*Paratypes*—5 ♂, London Hill Mine, B. C., 7000 ft., (R. P. Currie); 3 ♂, Hedley, B. C., July 25, 29, (Garrett); 3 ♂, Banff, Alta., Aug. 9, (Garrett); 1

♂, Truchas Peak, N. M., above timber line, (W. P. C.); and 1 ♂, White Mts., (Scudder); in the United States National Museum. The White Mountain specimen was labelled "paratype" of *orientalis* Tns.

***Fabriciella nivalis* n. sp.**

*Male.* Width of front equal to three-fourths the length of second antennal segment. Second antennal segment dull amber or fuscous in color. Parafrontals opaque except near vertex where they become partly subshining and black. Narrowest width of parafacials equal to that of front. Genae pollinose with sparse black hairs above. Proboscis and palpi normal. Front tarsi not dilated; the claws as long as the last two tarsal segments. Abdomen black except for the dull orange sides.

*Female.* Differs in having the front somewhat wider than an eye with the frontalia subshining black, a longer and lighter colored second antennal segment, dilated front tarsi, tarsal claws much shorter; and in frequently having discal hairs or bristles on the second and third segments.

*Holotypes*—1 ♂, Healey, Alaska, June 7, 1921, (J. M. Aldrich); in the United States National Museum.

*Allotype*—♀, same data.

*Paratypes*—7 ♂, 17 ♀, same data, in the United States National Museum and No. 802 in the Canadian National Collection, Ottawa.

***Fabriciella canadensis* n. sp.**

*Male.* Width of front equals one-half the eye width. Second antennal segment yellow and a little longer than the third. Parafrontals opaque. Narrowest width of parafacials slightly narrower than the front. Genae pollinose, with sparse black hairs above. Proboscis and palpi normal. Front tarsi not dilated, the claws about as long as the last two tarsi. Abdomen orange except for a black dorsal vitta and except for the fuscous sternites. Forceps strongly arched longitudinally terminating in the usual broad shining somewhat concave plate.

*Holotype*—1 ♂, Godbout, Que., July 20, 1918, (E. M. Walker); No. 803 in the Canadian National Collection, Ottawa.

*Paratypes*—1 ♂, same data as type and 2 ♂ on one pin from Nordegg, Alta., (J. McDunnough) in the Canadian National Collection, Ottawa; 1 ♂, same data as type in the United States National Museum.

***Fabriciella brevisrostris* n. sp.**

*Male.* Width of front equal to length of second antennal segment. Second antennal segment yellow and a little longer than the third. Parafrontals opaque. Narrowest width of parafacials equal to three-fourths the length of second antennal segment. Genae pollinose, with sparse black hairs above. Chitinous shaft of proboscis unusually short. Front tarsi slightly dilated, the claws almost as long as the three last tarsal segments. Tibiae and tarsi yellow. Abdomen orange except for a somewhat narrow median dorsal vitta. Forceps strongly arched longitudinally terminating in a broad somewhat concave shining plate.

This species is close to *F. spinosa* n. sp. but among other things lacks the conspicuous cluster of spines on the seventh tergite.

*Holotype*—♂, Keremeos, B. C., July 16, 1922, (C. B. D. Garrett); No. 809 in the Canadian National Collection, Ottawa.

*Paratypes*—♂, Vernon, B. C., (M. H. Ruhmann); ♂, Midday Valley, B. C., June 21, 1921, (G. Hopping); 2 ♂, Summit Mt. Lowe, Calif., July 4, (J. M. Aldrich); ♂, Mt. Lowe, July 3, 1917, (Aldrich); the last three in the United States National Museum.

***Fabriciella longiunguis* n. sp.**

*Male*. Width of front equal to three-fourths the length of the yellow second antennal segment. Second antennal segment a little longer than the third. Parafrontals opaque, narrowest width rather greater than that of front. Genae pollinose, with sparse black hairs above. Proboscis and palpi normal. Front tarsi slightly dilated, the claws as long as the three last tarsal segments. Abdomen, including the sternites, orange except for a dorsal black vitta that widens posteriorly to include most of the fourth tergite. Forceps strongly arched longitudinally terminating in a broad somewhat concave shining plate.

*Holotype*—1 ♂, Vernon, B. C., no date, (M. H. Ruhmann); in the Canadian National Collection, Ottawa.

***Fabriciella montana* Townsend.**

*Male*. Width of front at ocellus about one-half eye width. Second antennal segment yellow, longer than the third. Parafrontals opaque but somewhat black and shining on the inner margin. Parafrontals at narrowest point equal to about three-fourths the length of the second antennal segment. Genae subshining with sparse black hairs. Proboscis and palpi normal. Abdomen black except for lateral orange spots on the second and third segments. Sternites black. Forceps strongly arched longitudinally and terminated by a broad shining somewhat concave acuminate tip.

Redescribed from ♂ ♀, White Mts., (Morrison) (B. & B. 55).

***Fabriciella picifrons* Townsend.**

*Male*. Front as wide as eye; parafrontals at narrowest point equal to one-half the length of the second antennal segment. Parafrontals shining black. Distinguished from *F. latifrons* n. sp. by having the forceps longitudinally arched with a broad somewhat concave shining acuminate apex instead of "A" shaped and beaked.

*Female*. Similar but having the front one and one-fourth times as wide as an eye; the genae shining, fuscous.

Redescribed from six males and seven females; the males from Trenton, and Sudbury, Ontario; Northwest Territories; Melrose Highlands, Massachusetts; Uinta National Forest Park, Utah; and Morrison, Colorado.

***Fabriciella hispida* n. sp.**

*Male*. Easily distinguished from all other black species except perhaps *F. emarginata* by the presence of three pairs of median marginal macrochaetae on the second abdominal segment. Front slightly wider than second antennal segment, width of parafrontals equal to about two-thirds of the length of second antennal segment. Parafrontals opaque. Genae, proboscis and palpi normal. Abdomen black with dull chestnut laterals when viewed critically. No spines on the sternites or second genital segment. Forceps arched longitudinally with a broad shining, more than usually sulcate, and acuminate tip. Named to emphasize the median marginal macrochaetae.

*Female.* Has the marginal macrochaetae as in the male; front as wide as eye, parafrontals opaque, abdomen black, no discals.

*Holotype*—♂, Sudbury, Ont., No. 805 in the Canadian National Collection, Ottawa.

*Allotype*—♀, same data.

*Paratypes*—3 ♂, same data as type; 1 ♂, Northern Ontario; ♂, Kentville, N. S.; ♂, Fredericton, N. B., (J. D. Tothill); ♂, Hastings Co., Ontario, (Evans); in the Canadian National Collection, Ottawa.

***Fabriciella latiforceps* n. sp.**

*Male.* Narrowest width of front not quite equal to the length of second antennal segment. Second antennal segment yellow and longer than the third. Parafrontals opaque. Narrowest width of parafacials equal to three-fourths the length of second antennal segment. Genae pollinose with sparse black hairs above. Proboscis and palpi normal. Front tarsi scarcely dilated, the claws as long as the last two tarsal segments. Abdomen without discal bristles; black. Forceps strongly arched longitudinally, an unusually broad (hence the name) somewhat concave shining apex that is shortly acuminate.

*Holotype*—♂, Godbout, Que., July 25, 1918, (E. M. Walker); No. 804 in the Canadian National Collection, Ottawa.

*Paratypes*—♂, same data as holotype, in the United States National Museum, ♂, Banff, Alta., June 30, 1922 (C. B. D. Garrett); ♂, Mt. Revelstoke, B. C., Aug. 12, 1923, (E. R. Buckell), in the Canadian National Collection.

***Fabriciella spineiventer* n. sp.**

*Male.* Narrowest width of front equal to one half the eye width. Second antennal segment yellow and longer than the third. Parafrontals opaque. Narrowest width of parafacials equal to two-thirds the length of second antennal segment. Genae pollinose with sparse black hairs above. Proboscis and palpi normal. Front tarsi scarcely dilated, the claws as long as the last three tarsi. Abdomen without discal bristles; black; the first two sternites each with a conspicuous brush of bristles, the second genital segment with a group of short spines along the lower inner margin; the forceps A-shaped, being thickened dorsoventrally and being laterally compressed dorsally but not ventrally; the dorsum is compressed down to a mere shiny black line that projects distally into a very short spine.

*Holotype*—♂, Mt. McLean, B. C., 8000 ft., July 25, 1917, (J. D. Tothill); No. 812 in the Canadian National Collection, Ottawa.

*Paratypes*—♂, Moscow, Idaho, (J. M. Aldrich); in the collection of Dr. J. M. Aldrich; ♂, Vancouver, B. C., July, 1923, (D. E. Osburn).

***Fabriciella latianulum* n. sp.**

*Male.* Front slightly wider than length of second antennal segment. Second antennal segment orange or semifusous. Parafrontals pollinose. Narrowest width of the parafacials equal to about half the length of second antennal segment. Genae pollinose with black hairs above. Proboscis and palpi normal. Front tarsi not dilated, the claws as long as the three last tarsal segments. Abdomen without discal bristles; black; second sternite with a tuft of bristles and the second genital segment with a row of spines as described in the key. Forceps



proper A-shaped with the roof drawn out into a curved spine giving the suggestion of a chicken's head and bill in profile. The incomplete ring-like accessory plates blunt-pointed and abnormally broad (hence the name).

*Female.* Similar to the male but the front slightly wider than an eye; the front tarsi dilated and the claws not longer than the last tarsal segment; the abdomen without the remarkable tuft of spines on the second sternite.

*Holotype*—♂, Royal Oak, B. C., June 30, 1917, (B. H. Tothill); No. 813 in the Canadian National Collection, Ottawa.

*Allotype*—♀, Agassiz, B. C., Aug. 22, 1921, (R. Glendenning).

*Paratypes*—♂, same data as type, in the United States National Museum; 50 ♂ and ♀, Royal Oak, Victoria, Vancouver, Agassiz, B. C.; ♂, July, 1921, Larder Lake, Northern Ontario, (H. C. Cook).

### ***Fabriciella algens* Wied.**

*Male.* The characters given in the key include its chief distinguishing features. The width of facialia equals two-thirds, that of front about one and one-fifth times the length of the second antennal segment.

*Female.* A specimen taken in coitu has the front as wide as an eye, shining black parafrontals at the upper part, front tarsae dilated with the claws no longer than the last tarsus; the genae much less pollinose than in *F. latianulum*.

Redescribed from the holotype (a female in the Brussels Museum from Quebec City), a pair taken in coitu and 34 other males taken at Smiths Cove, N. S.; Salisbury and Fredericton, N. B.; Hastings, Trenton, Sudbury, Ottawa, Rainy River District, Ontario; Northwest Territories; Mt. Cheam, Agassiz, Penticton and London Hill Mine, B. C.; also from New Hampshire.

Female of the pair taken in coitu at Franconia, New Hampshire, made a homotype, and deposited in the Canadian National Collection, Ottawa.

### ***Fabriciella rostrata* n. sp.**

*Male.* Front wider than length of second antennal segment, nearly as wide as eye. Second antennal segment usually fuscous, longer than the third. Parafrontals opaque becoming subshining toward the vertex. Narrowest width of parafacials equal to two-thirds the length of the second antennal segment. Genae pollinose with sparse black hairs above. Proboscis and palpi normal. Front tarsi scarcely dilated; the claws as long as the last three tarsal segments. Abdomen without discal bristles; black. Forceps thickened dorsoventrally also, greatly flattened laterally, the dorsal ridge is extended into a beak-like portion (hence the name) so that in profile the base and beak are shaped like a chicken's head.

*Female.* Front wider, dull yellowish pollinose, moderately shining on part of upper portion in most specimens.

*Holotype*—♂, Penticton, B. C., August 8, 1913, (E. M. Anderson); No. 814 in the Canadian National Collection, Ottawa.

*Allotype*—♀, Hedley, B. C., August 29, 1923, (C. B. D. Garrett).

*Paratypes*—♂, Crow Agency, Montana, (R. Kellogg); ♂, Okanagan, B. C., (T. Wilson); ♂, Mt. McLean, B. C., (A. W. Phair); ♂, Dunvegan, Alta., (E. H. Strickland); 2 ♂, Lethbridge, Alta., July 15, August 9, 1921, (E. H. Strickland); 4 ♂, Lethbridge, Alta., July 6, 15, 16, 1921, (H. L. Seamans); ♂,



Lethbridge, July 6, 1921, (W. Carter); 2 ♂, Banff, Alta., July 30, 1922, (Garrett); 4 ♂, Hedley, B. C., July 20, 23, 29, 1923, (Garrett).

### *Fabriciella nitida* V. d W.

*Male.* Front as wide or wider than an eye. Differs from all other species in the boot-shaped third antennal segment and in the genitalia. Second genital segment is beset with small spine-like hairs on the distal ventral corners; the inner forceps are constricted at the base and drawn out apically into a beak-like portion so that the profile view suggests forcibly the head of a chicken with bill, head, and neck.

*Female.* Has a bluntly truncate third antennal segment that lacks the 'toe' part of the male. The parafrontals are much less pollinose, being mostly shining black.

The specimens before me are from British Columbia and Colorado.

#### SUGGESTED PHYLOGENY AND EVOLUTION.

The general relationships of the species are clearly indicated by the structures of the genital forceps. In the generalized forms the forceps are flat and unspecialized; as exemplified in the palaearctic species *F. ferox* Panz. and the nearctic species *acuminata* n. sp., *orientalis* Tn., *planiforceps* n. sp., and *dakotensis* Tn.

In the next condition the tip of the forceps remains broadly sulcate; but there is a dorsal thickening that results in a longitudinal curvature. This group comprises the palaearctic *marklini* together with the great majority of the nearctic species including *latiforceps* n. sp., *emarginata* n. sp., *hispida* n. sp., and *piceifrons* Tn., of the black-bodied series and all but *compressa* n. sp. in the yellow-bodied series.

In the next condition the deepened forceps become greatly flattened laterally. Included here are the palaearctic *rotundata*, if my specimen from Germany is correctly identified (I have another specimen determined as *rotundata* that has flat forceps), and the nearctic *compressa* n. sp.

Close to this is another condition exemplified by the nearctic *spineiventer* n. sp. in which the lateral flattening occurs at the dorsal but not at the ventral part of the forceps.

Such a condition forms an easy transition to one in which the apex becomes drawn out to a considerable length. This group includes the nearctic black-bodied species: *latifrons* n. sp., *rostrata* n. sp., *algens* Wied., *latianulum* n. sp. and lastly *nitida* V. d. W. in which the specialization is carried to the greatest extreme.

#### DISTRIBUTION OF THE NEARCTIC SPECIES.

Arctic:	<i>F. nivalis</i> n. sp., Alaska
Boreal N. A.	<i>F. latiforceps</i> n. sp., Que.
" "	<i>F. algens</i> Wied., N.S., N.B., Ont., N.W.T., B. C., and N.H.
" "	<i>F. pilosa</i> n. sp., B.C., Colo., N.M.
" "	<i>F. canadensis</i> n. sp., Que., Alta.
Boreal and transitional	
N. A.	<i>F. piceifrons</i> Tn., Ont., Mass., Utah, Col.
Western	<i>F. spineiventer</i> n. sp., B. C., Ida.

Western	<i>F. rostrata</i> n. sp. B. C., Alta., Mont.
"	<i>F. latifrons</i> n. sp., Man., N.W.T., S.D., Colo.
"	<i>F. latianulm</i> n. sp., B.C. Northern Ontario, Wash., Ida.
"	<i>F. nitida</i> V. d. W., Colo., B. C.
"	<i>F. emarginata</i> n. sp., Colo.
"	<i>F. acuminata</i> n. sp., Colo.
"	<i>F. spinosa</i> n. sp., Cal.
"	<i>F. palpalis</i> Coq., Cal.
"	<i>F. compressa</i> n. sp., Colo.
"	<i>F. latifacies</i> n. sp., Nev.
"	<i>F. latigena</i> n. sp., B. C. Mont.
"	<i>F. brevisrostris</i> n. sp., Colo.
"	<i>F. hirtidorsum</i> n. sp., Colo.
"	<i>F. longiunguis</i> n. sp., B. C.
Eastern	<i>F. orientalis</i> Tn., N.S., N.B., Que., Ont., Ind., Va., N.C.
"	<i>F. planiforceps</i> n. sp., N.C.
"	<i>F. dakotensis</i> Tn., Ont., Man., Me., Mass., D. C.
"	<i>F. hispida</i> n. sp., N.S., N.B., Ont.

## NOTE ON THE NESTING HABITS OF CHLORION ELEGANS.

BY C. N. AINSLIE,

U. S. Bureau of Entomology.

August 23, 1923, in a cutting of the Northern Pacific R. R. two miles east of the Montana line, in North Dakota, I noticed a rather large, light-colored Sphecid wasp, later determined for me by Professor O. A. Stevens of Fargo as *Chlorion elegans* Smith, busily engaged in trying to engineer an inch-long bit of dry grass root into a small opening in the sloping bank. The bank at this spot was composed of a fine sandy clay, quite firm but easily excavated.

The actions of this wasp reminded me of a house wren, struggling with the problem of inserting an awkwardly long twig through a small opening in her nest box. She worked with nervous haste for a number of minutes and was watched at short range with the utmost interest. As time went on and her efforts appeared to be without result she began to act as if discouraged. The fear that she might give up the task and depart without ceremony led to her capture and untimely death in a cyanide tube.

With the coast clear by means of her summary execution, the examination of the nest was clearly the most important duty. Perpendicular slicing revealed the fact that the entrance to the nest, a tunnel about 6 mm. in diameter, was entirely open for the first inch. Beyond this the passage was completely blocked by a plug composed of a compact mass of finely divided fiber, evidently produced by tearing to pieces the roots of grass such as the wasp was seen carrying when taken. These grass roots in the dry soil of this region are very woody and firm in texture and the preparation of this body of fiber an inch or more in length and 6 mm in diameter must have required many hours of unrelenting labor for

the mother wasp with only her powerful mandibles to split the stems. Much muscular effort also must have been expended in the packing of this fiber into its place, since of necessity the wasp was compelled to work entirely from the outside end of the mass in placing it. Each bit of fiber must have been pushed into place separately and with some force, to produce the firm body composing the plug. These fibers were so closely packed that no parasite could by any possibility force its way through this cleverly constructed barrier.

Behind this obstacle the passage was open for nearly two inches, then opened quite abruptly into a chamber, broadly oval, measuring not far from an inch and a half in its major axis and a little more than half an inch high. Within this vault lay fourteen tree crickets, *Oecanthus quadripunctatus*, two males and twelve females. All fourteen were still living but were paralyzed and entirely helpless, showing no sign of life save an occasional quiver of antenna or tarsus. These victims were placed in no particular order but were piled two or three deep in the middle of the floor, just as they had been dropped by the wasp when trundled in through the narrow passage. At the time this nest was investigated these crickets were quite numerous in the flowering heads of *Solidago rigida* which grew all about, and the wasp could easily have secured all she needed without flying far.

No egg was found in the nest although one was undoubtedly present, hidden perhaps by being mixed with the friable soil that interfered somewhat with the examination.

No other wasp of this species was observed flying about or nesting here although numerous small bees were busy searching every crevice and a number of Chrysids were taken not far from the nest.

It might have been worth while to have spent another hour or two watching this wasp before capturing her, in order to learn her methods of closing and concealing the opening to her nest. For she probably had some individual and unique way for both these operations.

A year previous, another Sphecid wasp, determined by the writer as *Spheg vulgaris*, was under observation in the outskirts of Sioux City, Iowa, while she completed the provisioning of her nest with slender green lepidopterous larvae. When all was finished to her satisfaction she closed the opening of her burrow by kicking a lot of earth into the mouth of the tunnel, pushing the earth in for some distance. Then after carefully smoothing the surface, she made a series of short flights in her peculiarly graceful fashion, each time bringing a selected fragment of dry earth, a lump half the size of a pea, and dropping these, with a few bits of weed stem that she found, on the freshly disturbed earth in order to conceal all traces of excavation. One could not help a feeling of admiration while watching her deft actions as she swung airily to and fro with one idea uppermost in her head, that of securing safety for her embryo offspring.

## A NOTE ON THE COURTSHIP OF TELEA POLYPHEMUS.

BY PHIL RAU,  
St. Louis, Mo.

At 11 : 10 p.m., May 13, when the temperature of the room was 62° F., I placed two males and one female in a cage, in the hope of observing the courtship of this species. The males were one and two days old, and the female one day old. I was led to make this experiment by the fact that, when I returned to the laboratory at that hour, the two males were very active in their individual cages. The moths of this species in confinement seldom work themselves up to a state of activity.

For the first five minutes after the three were placed together, the two males flew actively, or I may say threateningly, about each other at one end of the cage. This was more than a passing recognition of their rivalry, for they beat their wings so violently against one another and the wire cage that their "feathers flew."

Finally the younger male flew to the female at the opposite end of the cage, and, taking a position two inches in front of her, fluttered his wings rapidly, but he did so without striking her. His behavior in this attitude lasted just eight minutes and was quite different from the way in which he had beaten his rival with his wings a short while before. The other did not move a wing or leg during this period. Then suddenly this young male left the female and flew back to his rival and for a period of three minutes continued to chastise him with his wings. After this he returned to the female and rested opposite her, and all three remained quiet. I watched them until after midnight, but no mating occurred; this was only to be expected, since these moths seldom mate in confinement.

During this experiment, it was noted that the antennae of both males were erect and alert, while those of the female were drooping and limp. The next morning I found that the antennae of the males had relaxed. Under normal conditions, the antennae of both sexes droop. This would indicate that in the courtship, the antennae of the males do function, but those of the female probably do not. Since the female was in youthful vigor, we may be sure that old age was not the cause of this condition.

Those students who think that these creatures are devoid of emotions should repeat this experiment, to be convinced that in a pinch the male *polyphemus* behaves just about as would a more highly organized creature under the same circumstances. It is true that in nature the courtship may not occur, and it is possible that the limits of a small cage may have induced this behavior. But this, of course, would only show that new conditions call forth new types of reactions, which would not be possible if these creatures are children of tropisms.

---

NOTES ON THE RIBEARIA GROUP OF THE GENUS *ITAME*  
(LEPIDOPTERA).\*

BY J. MCDUNNOUGH,  
Ottawa, Ont.

The group in question contains those species listed in the Barnes and McDunnough Check List under Nos. 4399-4406; owing to individual variability in

---

\*—Contribution from the Division of Systematic Entomology, Entomological Branch, Dept. of Agric., Ottawa.

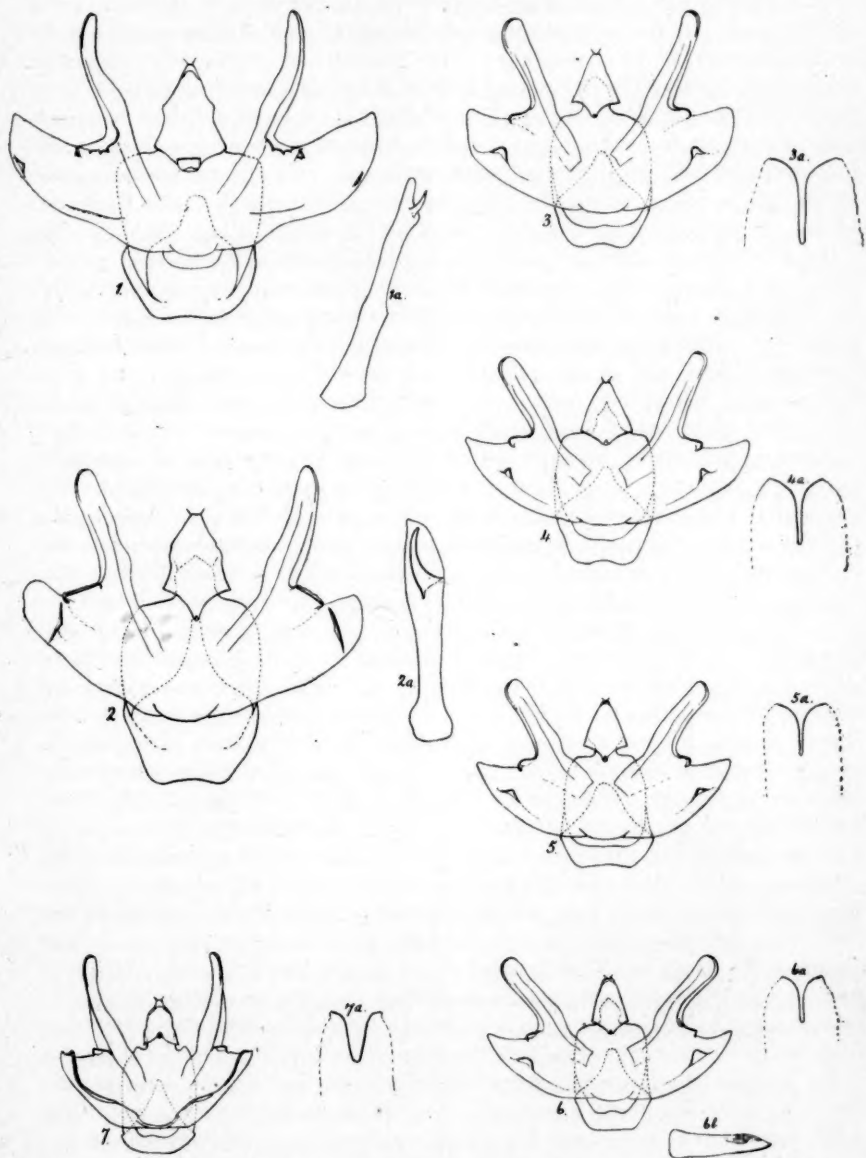
pattern and what appears to be a marked tendency toward melanism in certain of the species, identifications are often difficult to make correctly. With a view to testing the value of the male genitalia for taxonomic purposes I have recently prepared a number of slides of these organs including not only the typical forms of the various species but also all the various color phases and varieties in maculation possible. Besides the material from the Canadian National Collection I have examined the entire representation of this group in the Barnes Collection which includes specimens compared with the various types by myself a number of years ago; I have also received material for study from Mr. L. W. Swett, who has kindly given me valuable information regarding certain of Packard's types.

The result of my studies has been rather disconcerting; if similarity of genitalia is taken to indicate specific unity, then it is very evident that in several instances what we have been considering as good species will have to be listed as mere varieties or forms. Without, however, more extended knowledge of the larval stages and food plants, I hesitate at the present time to subscribe entirely to the above statement; information is before me which would seem to indicate at least a difference in food plants for certain forms which possess similar genitalia but differ considerably from each other in color and maculation. We are thus confronted by what may possibly be "phytophagic species" as defined by Walsh; the whole available information regarding the early stages is however so fragmentary that it would be presumptuous to form an opinion on the subject until the larvae have been definitely recognized and carefully studied.

While the general type of genitalia is essentially the same throughout the group, four species can be very satisfactorily separated on minor details of structure; these are *ribearia* Fitch, *flavicaria* Pack., *argillacearia* Pack. and *sulphurea* Pack., the salient points of difference will be discussed under the various specific heads.

*Itame ribearia* Fitch. The well-known gooseberry span-worm is accurately figured in Holland's Moth Book, Pl. XLIII, fig. 45. The synonymy as given in the Check List is correct except that *grossulariata* Saund. should be omitted: this name was never proposed and has crept into our lists through an error of cataloguing. *Fascioferaria* Hulst is apparently a western form of the same species; it was described (Ent. Am. 1887, II, 191) from a male and female from Colorado and I have before me a female from the same locality in the Barnes material which has been compared with Hulst's type at Rutgers College, New Brunswick, N. J.; there is also in the Canadian National Collection a long series of bred specimens from Lethbridge, Alta. In general the western race shows a marked tendency to form a broad purple-brown subterminal band across the primaries, especially in the female sex; this is, however, by no means constant and some specimens in our Lethbridge series approach the eastern form quite closely. There is no appreciable difference in male genitalia between Lethbridge, Alta., and Ottawa, Ont. specimens; the distinctive characteristics of the genitalia (fig. 1) of this species are;—the broad truncate apex of the gnathos, a curved spine at the apex of the aedoeagus, and the toothed nature of the margin of the first papilla situated at the junction of the costa and sacculus; the second papilla is small and is situated shortly before apex of sacculus, close to the ventral margin.





THE RIBEARIA GROUP OF THE GENUS ITAME

*Itame flavicaria* Pack. This species was described from 2 ♂, 3 ♀ from Manitou, Colorado and Salt Lake City and Farmington, Utah. Mr. Swett tells me that there exist in the Packard Collection at the present time only 2 ♂ from Manitou and 1 ♀ from Farmington and that as two of the specimens are badly worn he has restricted the type to one of the Manitou males (July 16). Packard's figure (Monog. Pl. XIII, fig. 49) is fairly good but considerably reduced in size; the pale yellowish ground color is sprinkled with brown scales and the four brown costal patches are prominent; the t.a. and t.p. lines are generally quite evident, the latter followed by brown shading which frequently forms a dark spot about the middle of the wing. *Subfalcata* Hulst, based on three females from Colorado, seems to be synonymous; the type was restricted (B. & McD. Contr. III, (3), 183) to the ♀ from Platte Canyon, Colo. in the Hulst Collection and a figure of a specimen from Vineyard, Utah, which matched this type closely, given on Pl. XV, fig. 11. This Utah specimen is before me together with a small series of males taken at the same time in the same locality; these males are much paler than typical *flavicaria*, lacking the brown sprinkling and showing mere traces of the cross lines; they agree, however, in genitalia and, until we know more about the range of variation in the typical form, hardly seem to warrant a name. The male genitalia (fig. 2) differs from that of *ribearia* in the much larger spine in the aedoeagus, the reduced apical section of the gnathos, the lack of teeth on the margin of the first papilla, which is rectangular in shape, and in the position of the second papilla, which is placed transversely across the sacculus a short distance before the apex.

*Itame argillacearia* Pack. The group of forms or possibly species which centres around this name is extremely perplexing. *Inceptaria* Wlk., which has generally been used in place of *argillacearia* Pack., I am discarding at the present time as the identity of Walker's species is doubtful (*vide* B. & McD. 1916, Contr. III, (1), 37); *modestaria* Hlst. (1895, Ent. News, VI, 11) is a *nomen nudum* and *olivalis* Hlst. (1898, Can. Ent. XXX, 164) was placed by me (1916, B. & McD. Contr. III, (3), 183) as a synonym of *argillacearia* after a study of the type in the United States National Museum. Packard's species is easily recognizable and is well figured by Holland in the Moth Book, Pl. XLIII, fig. 46. Mr. Swett informs me that the species occurs commonly in the blueberry regions, and he is of the opinion that the larvae are *Vaccinium* feeders; this statement receives additional substantiation from the fact that an almost typical form occurs at the Mer Bleue, near Ottawa, Ont., a peat bog thickly covered with *Chamaedaphne*, *Gaylussacia* and *Vaccinium*; as far, however, as I know, we have no definite records of the larva nor have females of the species been captured. The male genitalia (fig. 5) show good points of distinction from the two preceding species; the aedoeagus has no curved spine, is much shorter and chunkier and contains an ovate patch of cornuti, the second papilla is broadly triangular, situated at a point on the sacculus almost directly below the first papilla and continued toward the base of sacculus by a more or less well-defined chitinous ridge; the octavals of the eighth segment are closely approached with a narrow deep sinus between them.

*Occiduaris* Pack., *andersoni* Swett and *evagaria* Hulst, which at present are listed as good species, show a type of genitalia practically identical to that of *argillacearia*; I have made a number of slides, representing all the available forms, and can point to nothing that would definitely separate one from the other; the

figures. I give (figs. 3-6) show slight differences in the shape of the apical area of the sacculus and of the second papilla, notably with regard to the chitinous ridge extending towards the base; these differences however are not constant and are due partly to individual variation and partly to the position of the object on the slide.

Typical *occiduaria*, as figured by Packard on page 473 of his Monograph, is a rather bright yellow species with brown markings; it was described from two males from Oregon and Colorado. The species is common in southern British Columbia, Alberta and Manitoba, and at Waterton Lakes, Alta., in 1923 I bred a specimen from a larva found feeding on *Amelanchier*; unfortunately I neglected to draw up a description of this larva. A long series of males from the vicinity of Calgary, Alta. (Wolley-Dod) in both the Barnes and the Canadian National Collection shows a decided tendency towards melanism, fully one half of the specimens being considerably tinged with smoky olivaceous. A step further in this direction leads us to *andersoni* Swett, described from specimens from Atlin, northern B. C. This form was recorded and figured by Gibson from Yukon Territory (1920, Rep. Can. Arct. Exp. III, Part I, 43, Pl. V, fig. 15) and there are two further specimens in the Canadian National Collection from Ft. Wrigley, Mackenzie River. In color and size *andersoni* is very similar to *argillacearia* but shows better defined maculation as a general rule. At Nordegg, Alta., in 1921, I captured a long series of male specimens which seem referable to *andersoni*; they were common wherever the bog birch, *Betula glandulosa*, occurred and at the time I was of the opinion that this was probably the larval food plant; I was unable however to discover either larvae or female imagoes in spite of repeated search. These Nordegg specimens are slightly larger than the more northern ones, but very similar in color; a few show traces of olivaceous scaling but the general ground color of the whole series is decidedly smoky brown and I certainly never saw any specimens on the wing at Nordegg which at all approached typical *occiduaria* in color.

In the Canadian National Collection are a few male specimens from Sudbury, Ont., and Trenton, Ont. which resemble rather closely the darker Calgary forms of *occiduaria*; there is also a single male Sudbury specimen which is quite as yellow as several of the Manitoba specimens; the series is too small, and the specimens too worn, to make further comment. There is no reason, however, why the species should not occur, as is the case with so many geometrids, across the entire continent and it is quite possible that climatic conditions and especially the amount of regional moisture are responsible for the darker specimens.

It is rather extraordinary that no females of either the dark or light forms have been captured; they apparently conceal themselves very effectually and it is only by breeding that we may expect to secure an adequate knowledge of this sex and of the relationships in the group.

*Evagaria* Hulst, the last of the group with similar genitalia, was described from specimens from Wisconsin, Minnesota and Ontario. The type in the Hulst Collection is the Minnesota specimen and there is a homotype in the Barnes Collection compared by myself; the pale ochreous ground color with numerous brown speckles and the general lack of definite maculation is rather distinctive, especially in specimens from Eastern localities (New Brighton, Pa.; Ottawa, Ont.); some specimens however in the Barnes Collection from the Middle West (Decatur,

Ill.; Sioux City, Ia.) which I incline to associate with *evagaria*, show rather distinct crosslines and considerable dark subterminal suffusion and approach in this respect some of the duller forms of *occiduaria*. I bred a small series of both sexes from larvae found feeding on wild gooseberry at Aylmer, Que., in 1920 but neglected to take any notes on same as I thought at the time I was dealing with *ribearia*, to which species the larvae had evidently considerable similarity. The females are shorter winged than the males and more heavily sprinkled with brown. I might also draw attention to the fact that in the male genitalia (fig. 3) the apex of the sacculus is generally broader and blunter than in the allied forms and the excavation of the octavals somewhat deeper; unfortunately these differences do not appear to be entirely constant.

*Itame sulphurea* Pack. The species can at once be separated, apart from genitalia, from the members of the preceding group by the fact that the discal dot on both wings is a distinct pale-centred ringlet and not a mere dark point. It was described from two females, captured at Brookline and Natick, Mass.; later, in the monograph, under the name *sulphuraria* Packard mentions two males, presumably from Brooklyn, N. Y. and Victoria, B. C., figuring one on Pl. IX, fig. 62, and as no mention of color difference between the sexes is made it may be presumed that the males were yellow. The name has been generally associated with a cranberry-feeding larva which is described in detail by Franklin (1907, Ent. News, XVIII, 17) who also notes (p. 19) that the males of the species "are always considerably lighter, some specimens having almost no yellow tinge at all in their coloring." Mr. Swett has sent me a small series of this cranberry feeder from Bedford, Mass., the males being pale smoky with a faint purplish tinge and scarcely any maculation, whilst the females are deep sulphur yellow, marked as usual; were it not for the discal ringlet these males might easily be mistaken for *argillacearia* Pack. From the same source I have also before me four males from Grand Lake and Spruce Brook, Newfoundland, which are larger and deeper in color than the Massachusetts males and with somewhat better defined maculation, and further a single similar male from Bridgetown, Nova Scotia, in the Canadian National Collection. Females from these localities I cannot separate from the eastern females from Bedford, Mass., and a study of the male genitalia of eastern and western specimens shows no definite points of distinction. We are therefore confronted with the same peculiarity noticed under *occiduaria*, viz: a yellow form in the west, merging into a duller brownish form in the east; whether this difference is caused by diversity of food plants cannot be told until the western form has been bred. In the male genitalia the costal arms are narrower and longer than in the preceding species and the position of the second papilla has been shifted to the extreme apex of the sacculus, with a more or less well-defined chitinous ridge connecting it with the basal area of the valve; the excavation of the octavals is much broader than in the *argillacearia* group.

#### EXPLANATION OF PLATE.

1. Male genitalia of *Itame ribearia* Fitch (Ottawa, Can.).
- 1a. Aedoeagus of *Itame ribearia* Fitch.
2. Male genitalia of *Itame flavicaria* Pack. (Platte Canyon, Colo.).
- 2a. Aedoeagus of *Itame flavicaria* Pack.
3. Male genitalia of *Itame evagaria* Hulst (Meach Lake, Que.)



- 3a. Octavals of *Itame evagaria* Hulst.
4. Male genitalia of *Itame occiduaria* Pack. (Waterton, Alta.).
- 4a. Octavals of *Itame occiduaria* Pack.
5. Male genitalia of *Itame argillacearia* Pack. (Mer Bleue, Ottawa, Ont.)
- 5a. Octavals of *Itame argillacearia* Pack.
6. Male genitalia of *Itame andersoni* Swett (Nordegg, Alta.).
- 6a. Octavals of *Itame andersoni* Swett.
- 6b. Aedoeagus of *Itame andersoni* Swett.
7. Male genitalia of *Itame sulphurea* Pack. (Calgary, Alta.).
- 7a. Octavals of *Itame sulphurea* Pack.

## TWO UNDESCRIBED SPECIES OF CYRTOPOGON, WITH NOTES (DIPTERA)\*

BY C. HOWARD CURRAN,

Ottawa, Ont.

Since my "Revision of the Genus *Cyrtopogon* and Allies" several additional species have been described from North of Mexico and I have another undescribed species from the Lake Nipigon region, as well as the male of *C. varans* Curr. which must be described in order to complete the descriptions of the Canadian species.

### ***Cyrtopogon bigelowi* n. sp.**

Antennae black; mystax moderately sparse, black with fine golden hairs in the middle; abdomen ochre-yellow pollinose except basally and a spot on the anterior half or more of each segment at the sides. Allied to *varans* Curr. and *vulneratus* Mel. but the antennae are black, the abdominal pile shorter, finer, paler, and the pollen not nearly as bright. The female is very much like *varans* and *marginalis* but may be distinguished from both by its black antennae and trichostical pile.

Length, 12 to 13 mm. *Male*. Face rather strongly gibbose almost to the antennae, most prominent above, covered with darkish yellow pollen which appears paler in some lights; mystax composed of moderately stiff black hairs with fine deep yellow hairs in the middle. Front golden yellow pollinose, the hairs black. Antennae black, the first joint nearly twice as long as the second, the second greatly widened on the apical half, the third nearly twice as long as the first two, not as wide as the second, strongly constricted on basal half, its style fine, acute, about one-sixth as long as the third joint. Occiput black, grey pollinose, with black hair, the beard white, not extensive. Proboscis with white hair below, the palpi and antennae black haired.

Mesonotum brownish yellow pollinose, with a small blackish spot inside the humeri, and a suturally interrupted rather dull black vitta on either side which does not extend forward half way between the suture and front margin; the side margins before the suture are rather narrowly, behind broadly shining black, but less widely so than in *marginalis*; on either side of the narrow middle line is a moderately wide, posteriorly abbreviated more olivaceous pollinose, stripe the

\*—Contribution from the Division of Systematic Entomology, Entomological Branch, Dept. of Agric., Ottawa.



anterior sclerites more thickly similarly pollinose. Thoracal pile short, fine, black, the prothorax with white pile, the acrostical pile yellow. Scutellum shining black with a small basal spot of yellow pollen, its pile and that of the posterior part of the thorax rather long, black.

Legs black; basal two-thirds of the anterior four and almost half of the hind tibiae and the tarsal joints reddish, each joint increasingly more broadly blackish apically. Front coxae with dense yellowish pollen and abundant fine white hair, the remaining coxae with yellowish hair. Femora black haired, with yellow hair below, that on the front ones on the basal half, on the hind ones covering the whole length; tibiae with long, fine hairs below; tarsi with short yellow hairs basally, black apically.

Wings greyish on the apical half the discal cell strikingly hyaline, the base of the wing hyaline. Squamae yellowish, with short yellow fringe; halteres reddish yellow.

Abdomen shining black in ground color; from the middle of the second segment to the apex densely clothed with dull ochreous pollen, the sides, however, except for the posterior more yellow pollinose fascia, shining so that a short, transverse shining rectangle is left on the anterior of each segment; the middle line of each segment may be slightly less pollinose and therefore appear darker and the same applies to the apices of the apical segments. The pile is short, yellow, but is coarser, more abundant and black on the apex of the sixth and whole of the seventh and eighth segments, only the posterior margin of the eighth being evident. Genitalia shining black, flattened not large, transverse. The seventh segment becomes opaque blackish apically, the eighth seems to be shining.

*Female.* Head as in ♂ but the front more shining blackish in the middle, the mystax not quite so dense, the pollen of the occiput with a yellowish tinge especially along the orbits, the pale beard a little more extensive.

Mesonotum darker, less densely pollinose, the dark areas mentioned in the male rather shining and more extensive; the 5 is obsolete along the suture, the inner sutural spot representing the lower curve greyish, the stroke of the 5 wanting; except for the 5 and narrow middle line the pollen is more greyish tinged than in the male.

The anterior and posterior tibiae are not quite half, the median pair almost two-thirds reddish.

The portions of the wings which are greyish or cinereous in the ♂ are yellowish in the female or fuscous yellowish, the crossveins and furcations narrowly clouded with brown.

Abdomen shining black, with short, sparse yellowish pile; the first to fifth segments each with a transverse, sericeous or greyish, transverse spot on the sides, that on the first narrow and obscure, on the second and third covering about three fourths the width of the segment, on the fourth covering about half the width, on the fifth not over twice as long as wide.

*Holotype*—♂, Macdiarmid, Ont., July 6, 1922 (N. K. Bigelow); No. 635, in the Canadian National Collection, Ottawa.

*Allotype*—♀, same locality and collector, June 28, 1922.

*Paratypes*—♂, same data as allotype; 1 ♀, July 12, 1922 (Bigelow); in

the Royal Ontario Museum, Toronto; ♀ same locality, July 4, 1923, in Canadian National Collection.

This species belongs to a small group composed, up to the present time of three species, *vulneratus* Mel., *varans* Curr. and *bigelowi*, all characterized by the presence of a conspicuous reddish or yellow pollinose area on the dorsum of the abdomen and rather short pile which does not nearly obscure the ground color. All the species occur in the north and none have so far been recorded south of the Canadian border.

### *Cyrtopogon varans* Curran

This species was described from an unique ♀ from Gaspé, Quebec. Since that time several specimens of this sex and a single ♂ collected in the Lake Nipigon region by Mr. N. K. Bigelow have been seen by the writer and the ♂, which is a very beautiful insect, is herein described. Dr. Melander has described a very similar species, also from northern Ontario, which has the reddish pile covering the fifth segment in addition to the preceding two and one-half segments.

*Male.* The facial gibbosity extends almost to the antennae and is most prominent above; face yellowish pollinose; mystax yellowish, with a narrow black margin composed of stouter hairs which are condensed about the oral margin, but still not very numerous. Front brownish yellow pollinose, the middle portion less densely so or almost bare; its hairs all fine, black. Occiput greyish pollinose, especially along the orbits, its pile black, the white beard well separated from the eyes by black hair. First two antennal joints black, with black hair, the third red, the short sharp style black. Proboscis and palpi black, the former with whitish hairs beneath, the latter with black hair.

Thorax as in the ♀ the pollen of a richer yellow. Prothorax and anterior portion of the sternopleura white pilose; also some white hairs separated from the upper edge of the sternopleura by black hairs on the posterior upper half. Apical hairs of the scutellum sub-bristly and slightly differentiated from the black discal pile.

Legs as in the female. Wings hyaline, very slightly tinged with greyish beyond the middle, the discal cell somewhat conspicuously clear, the cross-veins and furcations narrowly fuscous, those at the middle of the wing more widely so.

Abdomen shining black, the posterior half of the second, (less on the sides) and the whole of the two following segments, except shortly rectangular transverse spots broadly separated from the posterior margin, densely reddish pollinose, these segments densely covered with tawny, moderately dense pile not arranged in tufts, the pile almost wanting on the middle of the segments, sparser also on the anterior half of the second; the first segment and the lateral margins of the first seven with paler yellowish pile; the fifth to eighth with coarser, shorter black hairs, which leave the disc almost bare and are condensed along the apex of each segment and less dense before the sides. These terminal segments are somewhat flattened, the genitalia also flattened and transverse, with black hair.

♂, Macdiarmid, Ont., June 21, 1923 (N. K. Bigelow) in the Canadian National Collection, Ottawa.

### *Cyrtopogon albovarians* n. sp.

Having received a pair of *C. albitarsis* Curr. from Dr. Melander I find that the ♀ described as the allotype of *albitarsis* is not that species, but represents an

undescribed one. The name *albovarians* is proposed for the specimen. The type is designated as follows:

*Holotype*—♀, Banff, Alta., July 9, 1916 (C. G. Hewitt); No. 636, in the Canadian National Collection, Ottawa.

### **Cyrtopogon albitarsis Curran**

The specimens received from Dr. Melander were labelled *C. auratus* Cole. Cole states in his descriptions: "Front tibiae and tarsi short golden pilose behind." From this it would appear that *C. albitarsis* is a distinct species, as these parts of the legs are white pilose. The ♀ has not yet been described, as explained under the preceding species. It is characterized as follows:

Differs from *C. albovarians* chiefly by having the posterior tibiae black pilose as in the ♂ *albitarsis*. The abdominal fasciae are slightly wider than in *albovarians* and rather yellowish, but in a rather teneral specimen they are only slightly yellowish.

Described from 1 ♀, Yellowstone Park, Cascades, Y. R., July 22, 1923, (A. L. Melander) and 1 ♀, Waterton Lakes, Alta., July 1, 1923 (J. McDunnough) in the Canadian National Collection, Ottawa. The latter specimen is somewhat teneral.

It seems that Dr. Melander has confused the present species with *auratus* Cole. Unless Cole wrongly described his species, *C. auratus* Cole in Dr. Melander's key should be replaced by the name "*albitarsis*", the use of the latter name in couplet 6 being unnecessary.

### **Cyrtopogon marginalis Loew**

Mr. Bigelow collected two specimens in the vicinity of Lake Nipigon, Northern Ontario, in July 1922, thus greatly increasing the range of this species.

### **Eucyrtopogon punctipennis Melander.**

This species traces out to *varipennis* Coq. in my table of species, Can. Ent., LV, 95. The wings are quite brownish and differ chiefly in lacking the elongate black spot in the marginal cell beyond the origin of the third vein, the spots in this region being confined to the furcations. The whole insect appears more brownish and less shining but these differences do not appear so great with magnification. The third longitudinal vein branches opposite the discal crossvein.

## **ANNUAL MEETING**

### **ENTOMOLOGICAL SOCIETY OF ONTARIO.**

The Sixty-first Annual Meeting of the Entomological Society of Ontario will be held at the Ontario Agricultural College, Guelph, on Thursday and Friday, November 27th and 28th, 1924.

Special efforts are being made by the College authorities for the entertainment of the members and visitors. It is expected that a number of American Entomologists will be present and give papers or take part in the discussions.

J. M. SWAINE, PRESIDENT,  
Entomological Branch,  
Ottawa.

A. W. BAKER, SECRETARY,  
O. A. College,  
Guelph.

Mailed November 17th.

e  
e

e.  
”  
f  
e

k  
n  
y

3.  
i-  
s

s  
s  
n

n,  
s.

,  
e  
is  
h  
n.

o  
d

-  
n

,